CHAPTER 11

HYPOTHERMIA PROTECTIVE CLOTHING

11-1. **GENERAL.** This chapter contains information about hypothermia protective clothing designed to permit personnel to function and survive in cold water. This chapter describes the following clothing:

- Survival (Exposure) Suit.
- Antiexposure Coverall.

WARNINGS

The survival (exposure) suit provides the best protection from hypothermia in the water. However, it is extremely bulky and awkward to work in and is therefore limited to use for crews operating in cold weather when abandoning ship.

The antiexposure coverall provides good durability and out-of-water protection from the elements. It provides limited protection from hypothermia to crew members in the water.

11-2. **APPLICATION.** Commanders and vessel masters will ensure compliance with the guidelines described below:

- Watercraft crew members, rescue swimmers, and so forth, shall wear hypothermia protecive clothing if the water temperature is below 60 degrees F.
- The commander or vessel master may waive the requirement for wearing an antiexposure coverall if the degree of risk to hypothermia is small (such as in nonhazardous daylight rescue operations in calm water).
- A PFD should NOT be worn over an antiexposure coverall or survival suit because the device is inherently buoyant. Although a PFD will improve chances for survival during prolonged periods because it provides improved flotation, the additional buoyancy creates problems for the wearer attempting to leave capsized watercraft.

11-3. **SURVIVAL SUIT.** The survival suit (often referred to as an “exposure suit” or “immersion suit”) is worn by crews when abandoning ship. The suit affords protection from exposure to cold water, wind, and spray. The foam fabric is a durable and elastic material with high flotation characteristics providing approximately 35 pounds of buoyancy.

a. **Configuration.** The Coast Guard approved survival suit (Figure 11-1, page 11-3) is a one-piece, international orange garment constructed from 3/16-inch nylon-lined neoprene or PVC foam.

NOTE

The buoyancy provided to the lower torso will cause the wearer to float horizontally either face up or face down in rough seas (see Figure 11-2, page 11-4). Additional flotation, such as the inflatable collar provided with the suit, must be used to assure faceup flotation (see Figure 11-3, page 11-4). The Adult Universal survival suit is designed so that one size will tit most persons (weighing between 110 and 330 pounds). Other sizes are available. The thermal qualities of the fabric/foam laminate will keep survivors warm whether they are wet or dry.

b. **Application.** Masters and coxswains of watercraft that have survival suits will ensure that every other abandon ship drill conducted uses the survival (exposure) suits in lieu of the PFD.

WARNING

No storage container for survival suits may be capable of being locked.

c. **Modifications.** Attach a personal distress signal light to the left breast pocket.

d. **Donning.** To don the survival suit, proceed as follows (see also Figure 11-4, page 11-4):

CAUTION

When donning/wearing the survival suit, extreme caution shall be taken to avoid sharp, protruding objects that may snag or tear the suit.

NOTE

During training, use plastic baggies to cover boots to prevent tearing the suit.

- Remove suit from stowage bag with a sharp jerk of the carrying bag (see Figure 11-4, A).
- Don suit in the same fashion as donning coveralls (see Figure 11-4, B).
- Don the hood before you zip up the suit (see Figure 11-4, C).
- Close the zipper completely. To avoid problems zipping up the suit, arch your back to remove wrinkles in the fabric (see Figure 11-4, D).
- Close the spray shield and inflate the collar for additional flotation (see Figure 11-4, E).

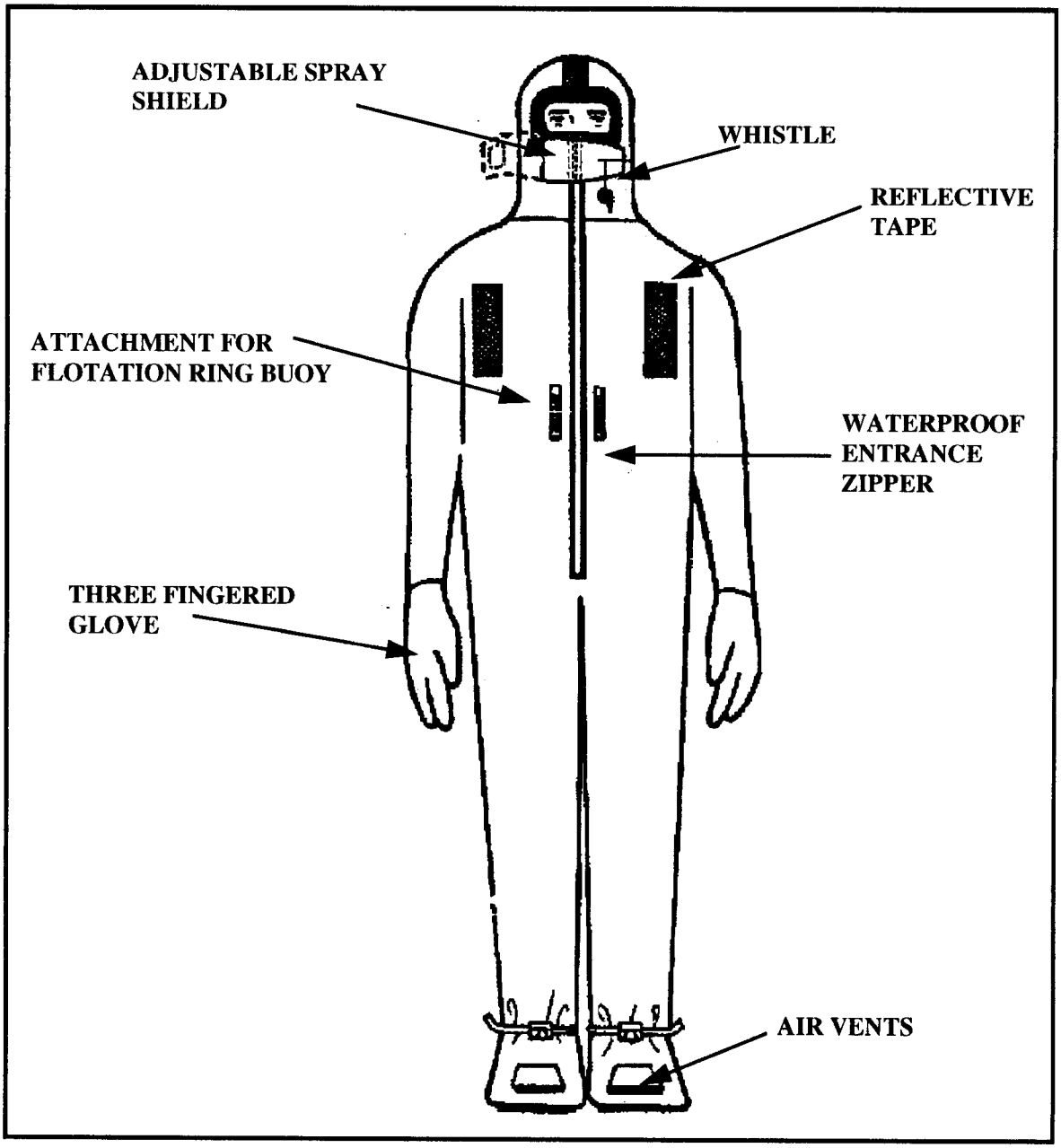

Figure 11-1. Survival (immersion) suit (typical)

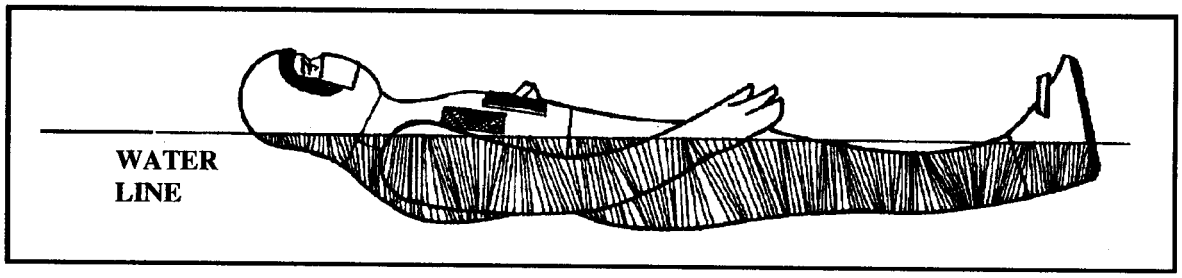

Figure 11-2. Position in the water without auxiliary float ring

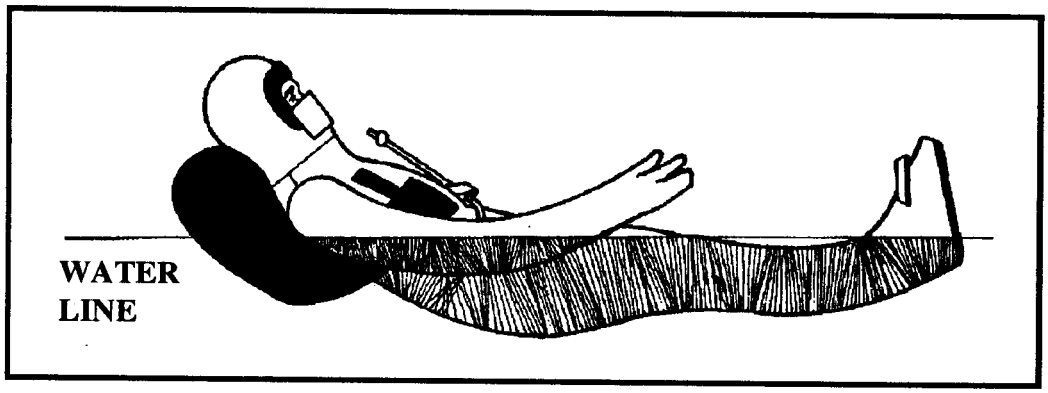

Figure 11-3. Position in the water with auxiliary float ring

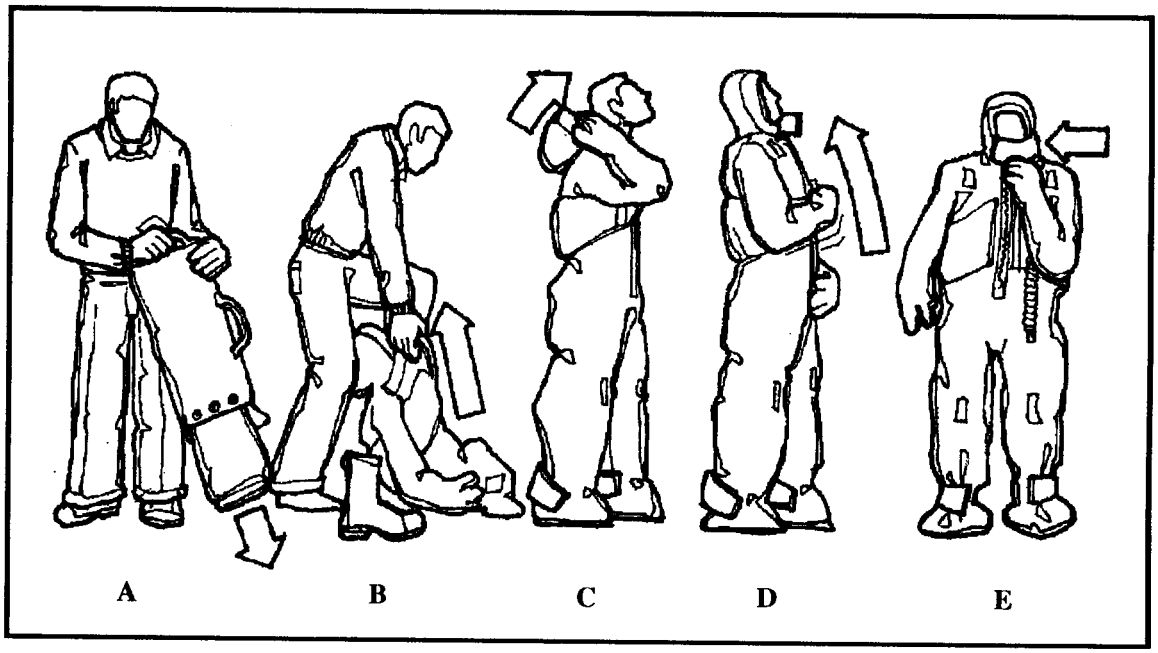

Figure 11-4. Steps for donning survival suit

e. **Inspection.** The survival suit shall be inspected before being placed into service and quarterly thereafter. To inspect the suit, proceed as follows:

(1) ***Stowage bag.*** Check condition of snaps on bag for ease of operation.

(2) ***Suit.*** Lay out on a flat, clean surface and check for obvious damage.

(3) ***Zipper.*** Work zipper up and down to check for ease of operation. If zipper is excessively rough, wipe with a soft, clean, lint-free cloth and lubricate with the wax lubricant found in suit breast pocket.

NOTE

The teeth that actually secure the waterproof zipper are the small teeth on the inside of the zipper. A little corrosion on these teeth can block the slider or damage the teeth so the zipper does not operate. If a closed zipper can be separated when probed with a (dull) knife, the zipper needs to be replaced.

(4) ***Inflatable collar.*** Check collar for obvious damage.

NOTE

Periodically inflate and allow to stand overnight. If the collar does not stay firmly inflated overnight, it should be repaired or replaced. Inspect lock screw on inflatable collar inflation tube to ensure that it is in the unlocked position.

(5) ***Marking.*** Each survival suit must be stenciled, identifying the vessel's name or number.

(6) ***Reflective tape/material.*** Survival suits are equipped with reflective tape/material when they are manufactured. The material is positioned on the suit to make a person wearing the suit in the water as visible as possible under nighttime search conditions. The pattern is not necessarily the same as that used on a lifejacket or other PFD.

(7) ***Survival light.*** Make sure the survival light is operational or has not expired.

f. **Packing.** To repack the survival suit after inspection, follow the manufacturer's instructions or proceed as follows:

- Lay out suit on a flat clean surface with front up and arms out.
- Make sure entry zipper is in the open position.
- Roll or fold suit, feet first, up to chin, making sure not to wrinkle water valves.

- Fold arms horizontally across roll.
- Place suit in bag and close snaps.
- Stow bag with handle exposed.

g. **Repairs.** The following repairs are authorized on the survival suit. Commercial assistance should be obtained for repairs beyond the capability of the unit.

CAUTION

Repairs should be made only with neoprene cement. Other cements may contain solvents that would weaken the material.

(1) ***Separated seams.*** To repair separated seams, complete the following steps:

- Trim jagged edges with scissors until new rubber shows.
- Remove old cement.
- Thoroughly dry material.
- Apply four coats of cement along entire surface of material to be repaired. Allow each coat to dry between each application (usually 10 minutes).
- When the last coat becomes tacky, align edges. Apply firm and even pressure when pressing edges together. Hold edges together for 3 or 4 minutes.
- Allow at least 1 hour for cement to set before using repaired item.

(2) ***Rips and tears.*** To repair rips and tears, follow the same steps as shown in repairing separated seams above.

(3) ***Holes.*** To repair holes, complete the following steps:

- When entire areas are missing, trim edges of area to convenient configuration.
- Cut a replacement piece conforming to size and shape of prepared area.
- Proceed as in steps shown in repairing separated seams above.

(4) ***Corroded zippers.*** To clean zippers, complete the following steps:

- Scrub with toothbrush, using fresh water.
- Rub a bar of soap or paraffin (NO oil or grease) over edges of zipper to act as a lubricant and retard corrosion.

h. **Cleaning.** To clean the survival suit, complete the following steps:

CAUTION

In NO situation shall thinners, solvents, or any similar agents be used to clean suits that have been exposed to paint, paint removers, acids, solvents, gasoline, or any substance containing acetones. When suits have been submerged or exposed to salt water spray, suits shall be washed under a shower.

- Wash under a shower with a mild soap.

CAUTION

Do NOT wring out survival suits.

- To dry the suit, hang it on a wooden hanger in a cool, dry, well-ventilated area. Do NOT dry in direct sunlight.

i. **Stowage.** Survival suits are intended for "abandon ship" use. Stow them so they are readily accessible to the individuals for whom they are intended. This is to prevent searching throughout the vessel to find them in an emergency.

- Ensure suit is dry and clean.
- Powder suit with a nonallergic hydrous silicate of magnesium powder (talc) (NSN 6810-00-270-9989).

CAUTION

Scented powders or body powders should not be used, as they contain chemicals that may cause suit material to deteriorate.

- Store suit in a dry, well-ventilated locker, with container handles exposed, or according to manufacturer's directions.
- Stow suits in or near berthing areas. Duplicate survival suits are required for persons whose normal work station is not near their berthing area.
- Do not stack suits. Excessive stacking can compress suits at the bottom of the pile, eventually damaging the buoyant insulating foam.

j. **Number Required (Class "A" Watercraft).** One survival suit for each person on board, plus an additional survival suit for each underway watch station (such as bridge, lookout, and engineroom.

k. **Procurement.** The following are the NSNs for approved survival suits:

- *Child (NSN 4220-01-251-9123).* Up to 110 pounds, 4 feet, 11 inches tall, 36-inch chest. Yellow carrying bag.
- *Adult, Universal (NSN 4220-01-251-6466).* From 110 to 330 pounds, 6 feet, 3 inches tall, 48-inch chest. Orange carrying bag.
- *Adult, Jumbo (NSN 4220-01-251-6467).* From 330 to 375 pounds, 6 feet, 9 inches tall, 58-inch chest. Green carrying bag.

11-4. **ANTIEXPOSURE COVERALL.** Personnel operating in a cold, wet environment wear the antiexposure coverall when they need protection from hypothermia (see Figure 11-5). The antiexposure coverall (often called a "deck suit" or "work suit") affords adequate protection from exposure to cold water, wind, and spray. It provides flotation similar to that provided by the work vest. Only Coast Guard-approved antiexposure coveralls are authorized for use.

> NOTE
>
> The antiexposure coverall is primarily used by watercraft crew members where they may be exposed to intermittent spray.

a. **Configuration.** The antiexposure coverall is made of orange or orange and navy blue urethane-coated nylon exterior fabric with a closed-cell foam interlining to provide thermal protection. It provides at least 17 ½ pounds of buoyancy. The coverall allows full freedom of movement. The suit features an attached, orally inflated pillow to support the wearer's head in the water. It also has an attached hood for extra thermal protection and reflective tape/material on the hood and shoulders for better visibility at night. For added protection, personnel should carry wet-suit or ski gloves for use with the antiexposure coverall. The coverall is manufactured in five sizes ranging from small to extra-large.

b. **Application.** Army watercraft personnel shall wear this garment when working in areas where exposure to hypothermia is likely.

> NOTE
>
> A rescue swimmer may use the antiexposure coverall if worn with a safety harness and tending line, and the victim's immediate needs outweigh the swimmer's risk of becoming hypothermic.

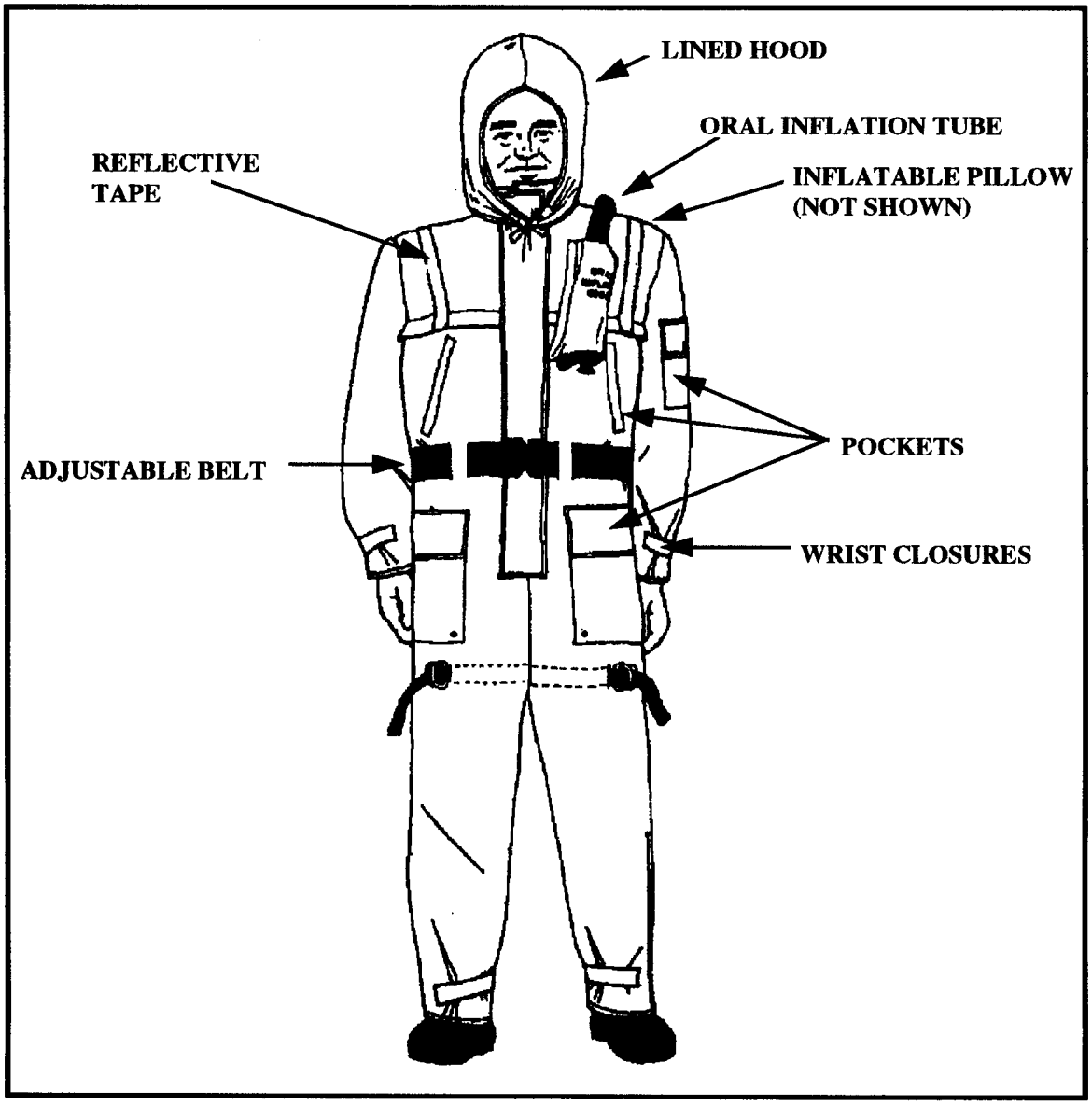

Figure 11-5. Antiexposure coverall

NOTE

When wearing the antiexposure coverall, you must completely close the zipper and all wrist and ankle seals before entering the water. Inflate the head support/pillow for additional flotation.

c. **Modification.** Attach a personal disteress signal light to the shoulder area.

d. **Donning.** Don antiexposure coveralls in the same fashion as standard coveralls.

e. **Inspection.** Units shall inspect the antiexposure coverall quarterly. To inspect the coverall, proceed as follows:

- Lay out suit and check for obvious damage.
- Work entry zipper up and down to check for ease of operation. You may lubricate the zipper by rubbing a bar of soap or paraffin (NO oil or grease) over edges of zipper.
- Check buoyancy chamber and inflation tube for obvious damage.
- Inflate buoyancy chamber and check for leaks.
- Deflate chamber and stow in chamber casing.

f. **Repairs.** Units should make only minor sewing repairs to antiexposure coveralls. Obtain commercial assistance for repairs beyond the capabilities of the unit.

g. **Cleaning.** To clean the antiexposure coverall, complete the following steps:

CAUTION

When coveralls have been submerged or exposed to salt water or salt spray, wash them in a shower. Do not use thinners, solvents, or similar agents for cleaning coveralls that have been exposed to paint, paint removers, acids, solvents, gasoline, or any substance containing acetones.

- Wash under a shower with a mild soap.

CAUTION

Do NOT wring out antiexposure coverall.

- To dry coveralls, hang on a wooden hanger in a cool, dry, well-ventilated area. Do not dry in direct sunlight.

NOTE

Units may machine wash excessively soiled antiexposure coveralls. Use a gentle cycle and mild soap. The water temperature should not exceed 105 degrees F.

CAUTION

Do NOT attempt to dry antiexposure coveralls with a clothes dryer.

11-5. **PROCUREMENT.** Units shall purchase only Coast Guard-approved antiexposure coveralls. Units may obtain acceptable coveralls from the following manufacturers:

Mustang Manufacturing Company
3870 Mustang Way
Billingham, WA 29226
(508) 636-6961
Specify: Mustang Model 2175 (Orange)

Lifesaving Systems Corporation
720 4th Street, S.W.
Ruskin, FL 33570-1829
(813) 645-2768
Specify: Stearns Model IFS 580 (Orange)